

Notice of Allowability

Application No.

10/623,347

Examiner

Kandasamy Thangavelu

Applicant(s)

COLVIN ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to August 8, 2006.
2. ☒ The allowed claim(s) is/are 1,5-7,11 and 12.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' communication dated August 8, 2006. Claims 1 and 7 were amended. Claims 1, 5-7, 11 and 12 of the application are pending.

Examiner's Amendment

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Devon Grant on October 16, 2006.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. The application has been amended as follows:

In the specification:

In the amendment dated November 28, 2005, Page 2, Para 032, Line 6, "10/622,976, filed on July 18, 2003"

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has been changed to

-- 10/622,976, filed on July 18, 2003, now issued as U.S. Patent 7,096,172 on August 22, 2006--.

In the amendment dated November 28, 2005, Page 2, Para 032, Line 8, "10/622,976"

has been changed to

-- 10/622,976, now issued as U.S. Patent 7,096,172 --.

In the amendment dated November 28, 2005, Page 3, Para 048, Line 6, "10/622,976"

has been changed to

-- 10/622,976, now issued as U.S. Patent 7,096,172 --.

In the amendment dated November 28, 2005, Page 3, Para 048, Line 8, "10/622,976"

has been changed to

-- 10/622,976, now issued as U.S. Patent 7,096,172 --.

In the amendment dated November 28, 2005, Page 3, Para 055, Line 5, "10/622,976"

has been changed to

-- 10/622,976, now issued as U.S. Patent 7,096,172 --.

Page 6, Para 025, Line 1, "optimized"

has been changed to

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-- optimize --.

Page 9, Para 032, Line 4, "target locations"

has been changed to

-- platform locations --.

Page 10, Para 036, Line 2, "target locations"

has been changed to

-- platform locations --.

Page 12, Para 039, Line 3, "target selection"

has been changed to

-- platform selection --.

Page 15, Para 048, Line 4, "target locations"

has been changed to

-- platform locations --.

4. In the claims:

In amended claim 1, lines 1-2, "optimized platform location sets locations"

has been changed to

-- optimized platform locations --.

In amended claim 1, line 15, "user-specified number of platforms"

has been changed to

-- pre-selected number of platforms --.

In amended claim 7, line 16, "user-specified number of platforms"

has been changed to

-- pre-selected number of platforms --.

Reasons for Allowance

5. Claims 1, 5-7, 11 and 12 of the application are allowed over prior art of record.

6. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

The closest prior art of record shows:

(1) a method of determining well locations in a 3D reservoir model while satisfying the constraints of minimum interwell spacing, maximum well length, angular limits for deviated completions and minimum distance from reservoir and fluid boundaries; selecting combinations of well sites with highest value of desired productivity metric; searching a number of trajectories from platform locations with a preset radius, inclination and well length and azimuth; optimizing the parameters of porosity, permeability or a combination; selecting wells to minimize distance

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from the offshore platforms; selecting maximum number of wells (**Cullick et al.**, U. S. Patent 6,549,879);

(2) a method of controlling production from a plurality of petroleum wells and reservoirs coupled to a limited number of surface facilities to enhance production from the reservoirs; it is economically advantageous to couple a substantial number of wells from a plurality of reservoirs to a single set of surface facilities; the production performance parameters are maximization of oil production and maximizing an economic value of the entire production system (**Middya**, U. S. Patent Application 2002/0165671); and

(3) a method for locating lateral wellbore drilled from a main wellbore casing for positioning members with respect to the lateral wellbore; horizontal wells are cost effective means to increase production and maximize recovery of hydrocarbons from a reservoir while lowering the cost; minimizing the number of well locations to develop an oil and gas field; reducing the number of platforms results in reduced investment and lower operational costs (**Brunet**, U. S. Patent 6,315,054).

Additional state of the art reviewed and considered by the Examiner is found in Devine et al., "Models for the minimum cost development of offshore oil fields", Management Science, April 1972; Iyer et al., "Optimal planning and scheduling of offshore oil field infrastructure investment and operations", Ind. Eng. Chem. Res, 1998; Johnson et al., "Improving gas storage development planning through simulation-optimization", 2000 Society of Petroleum Engineers Eastern Regional Meeting, October 2000; and Johnson et al., "Using artificial neural networks

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and genetic algorithm to optimize well-field design: Phase I final report", Lawrence Livermore National Laboratory, March 1998.

None of these references taken either alone or in combination with the prior art of record discloses a computer-implemented method of generating optimized platform locations for extracting hydrocarbons from underground reservoirs, specifically including:

(Claim 1) "determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the pre-selected number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach more targets or the same number of targets with less total distance thereby returning the locations that are most desirable".

None of these references taken either alone or in combination with the prior art of record discloses a computer-readable medium having computer-executable instructions which when executed on a computer perform a process for generating optimized platform locations for extracting hydrocarbons from underground reservoirs, specifically the process including:

(Claim 7) "determining a best set of platform locations from the set of possible platform locations by an iterative process which adds each of the possible platform locations to a list comprising the pre-selected number of platforms and determining if the inclusion of each one of the possible platform locations in the list causes the total set of platforms to reach more targets or the same number of targets with less total distance".

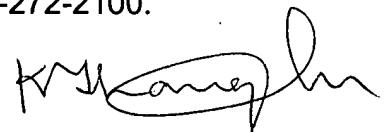
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7. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez, can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.



K. Thangavelu
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October 16, 2006